

ADOLESCENT IMMUNIZATION

GOOD NEW-BAD NEWS
OR
GOOD INFO-BAD INFO



Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2011

For those who fall behind or start late, see the schedule below and the catch-up schedule

Vaccine ▼	Age ►	7–10 years	11–12 years	13–18 years	
Tetanus, Diphtheria, Pertussis ¹			Tdap	Tdap	Range of recommended ages for all children
Human Papillomavirus ²	see footnote ²		HPV (3 doses)(females)	HPV Series	
Meningococcal ³		MCV4	MCV4	MCV4	
Influenza ⁴		Influenza (Yearly)	Influenza (Yearly)	Influenza (Yearly)	
Pneumococcal ⁵		Pneumococcal	Pneumococcal	Pneumococcal	Range of recommended ages for catch-up immunization
Hepatitis A ⁶		HepA Series	HepA Series	HepA Series	
Hepatitis B ⁷		Hep B Series	Hep B Series	Hep B Series	
Inactivated Poliovirus ⁸		IPV Series	IPV Series	IPV Series	
Measles, Mumps, Rubella ⁹		MMR Series	MMR Series	MMR Series	Range of recommended ages for certain high-risk groups
Varicella ¹⁰		Varicella Series	Varicella Series	Varicella Series	

This schedule includes recommendations in effect as of December 21, 2010. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment, patient preference, and the potential for adverse events. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations: <http://www.cdc.gov/vaccines/pubs/acip-list.htm>. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS) at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap). (Minimum age: 10 years for Boostrix and 11 years for Adacel)

- Persons aged 11 through 18 years who have not received Tdap should receive a dose followed by Td booster doses every 10 years thereafter.
- Persons aged 7 through 10 years who are not fully immunized against pertussis (including those never vaccinated or with unknown pertussis vaccination status) should receive a single dose of Tdap. Refer to the catch-up schedule if additional doses of tetanus and diphtheria toxoid–containing vaccine are needed.
- Tdap can be administered regardless of the interval since the last tetanus and diphtheria toxoid–containing vaccine.

2. Human papillomavirus vaccine (HPV). (Minimum age: 9 years)

- Quadrivalent HPV vaccine (HPV4) or bivalent HPV vaccine (HPV2) is recommended for the prevention of cervical precancers and cancers in females.
- HPV4 is recommended for prevention of cervical precancers, cancers, and genital warts in females.
- HPV4 may be administered in a 3-dose series to males aged 9 through 18 years to reduce their likelihood of genital warts.
- Administer the second dose 1 to 2 months after the first dose and the third dose 6 months after the first dose (at least 24 weeks after the first dose).

3. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 years)

- Administer MCV4 at age 11 through 12 years with a booster dose at age 16 years.
- Administer 1 dose at age 13 through 18 years if not previously vaccinated.
- Persons who received their first dose at age 13 through 15 years should receive a booster dose at age 16 through 18 years.
- Administer 1 dose to previously unvaccinated college freshmen living in a dormitory.

3. Meningococcal conjugate vaccine, quadrivalent (MCV4). (Minimum age: 2 years), cont.

- Administer 2 doses at least 8 weeks apart to children aged 2 through 10 years with persistent complement component deficiency and anatomic or functional asplenia, and 1 dose every 5 years thereafter.
- Persons with HIV infection who are vaccinated with MCV4 should receive 2 doses at least 8 weeks apart.
- Administer 1 dose of MCV4 to children aged 2 through 10 years who travel to countries with highly endemic or epidemic disease and during outbreaks caused by a vaccine serogroup.
- Administer MCV4 to children at continued risk for meningococcal disease who were previously vaccinated with MCV4 or meningococcal polysaccharide vaccine after 3 years (if first dose administered at age 2 through 6 years) or after 5 years (if first dose administered at age 7 years or older).

4. Influenza vaccine (seasonal).

- For healthy nonpregnant persons aged 7 through 18 years (i.e., those who do not have underlying medical conditions that predispose them to influenza complications), either LAIV or TIV may be used.
- Administer 2 doses (separated by at least 4 weeks) to children aged 6 months through 8 years who are receiving seasonal influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.
- Children 6 months through 8 years of age who received no doses of monovalent 2009 H1N1 vaccine should receive 2 doses of 2010-2011 seasonal influenza vaccine. See *MMWR 2010;59(No. RR-8):33–34*.

5. Pneumococcal vaccines.

- A single dose of 13-valent pneumococcal conjugate vaccine (PCV13) may be administered to children aged 6 through 18 years who have functional or anatomic asplenia, HIV infection or other immunocompromising condition, cochlear implant or CSF leak. See *MMWR 2010;59(No. RR-11)*.
- The dose of PCV13 should be administered at least 8 weeks after the previous dose of PCV7.
- Administer pneumococcal polysaccharide vaccine at least 8 weeks after the last dose of PCV to children aged 2 years or older with certain underlying medical conditions, including a cochlear implant. A single revaccination should be administered after 5 years to children with functional or anatomic asplenia or an immunocompromising condition.

6. Hepatitis A vaccine (HepA).

- Administer 2 doses at least 6 months apart.
- HepA is recommended for children aged older than 23 months who live in areas where vaccination programs target older children, or who are at increased risk for infection, or for whom immunity against hepatitis A is desired.

8. Inactivated poliovirus vaccine (IPV).

- The final dose in the series should be administered on or after the fourth birthday and at least 6 months following the previous dose.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

9. Varicella vaccine.

- For persons aged 7 through 18 years without evidence of immunity (see *MMWR 2007;56[No. RR-4]*), *administer 2 doses if not previously vaccinated or the second dose if only 1 dose has been administered.*
- For persons aged 7 through 12 years, the recommended minimum interval between doses is 3 months. However, if the second dose was administered at least 4 weeks after the first dose, it can be accepted as valid.
- For persons aged 13 years and older, the minimum interval between doses is 4 weeks.

10. Measles, mumps, and rubella vaccine (MMR).

- The minimum interval between the 2 doses of MMR is 4 weeks.

KANSAS SCHOOL IMMUNIZATION REQUIREMENTS 2011-2012

- Diphtheria, Tetanus, Pertussis (DPT): Five doses required. Four doses acceptable if dose 4 given on or after the 4th birthday. A single dose of Tdap required at grades 7-9 if no previous history of Tdap vaccination regardless of interval since last Td vaccination.
- http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6001a4.htm?s_cid=mm6001a4_e%0d%0a
- Poliomyelitis (IPV/OPV): four doses required. One dose required after age 4 regardless of the number of previous doses, with a 6 month minimum interval from the previous dose.
- Measles, Mumps, Rubella: two doses required.
- Varicella (chickenpox): two doses required for grades K-2 and 7; one dose required for grades 3-6 and 8-11 unless history of varicella disease documented by licensed physician. Two doses are currently *recommended* by the ACIP for all ages.

KANSAS SCHOOL IMMUNIZATION REQUIREMENTS 2011-2012, cont.

- Haemophilus influenzae type b (Hib): three doses required for children less than 5 years of age in early childhood programs. Total doses needed for series completion is dependent on the type of vaccine and the age of the child when doses given.
- Pneumococcal conjugate (PCV): four doses required for children less than 5 years of age in early childhood programs. Total doses needed dependent on the age of the child when doses given.
- Hepatitis A: two doses required for children less than 5 years of age in early childhood programs.
- Detailed school immunization requirements by age group are listed on the 2-1-11 version of the Kansas Certificate of Immunization (KCI). <http://www.kdheks.gov/immunize/download/KCI.Form.pdf>

KANSAS SCHOOL IMMUNIZATION RECOMMENDED 2011-2012

- Meningococcal (MCV4): one dose *recommended* at 11 years with a booster dose at 16 years of age; not required for school entry.
- Human papillomavirus (HPV): three doses *recommended* for females at 11 years of age and provisionally recommended for males at 11 years of age; not required for school entry.
- Influenza: yearly vaccination *recommended* for all ages \geq 6 months of age; not required for school entry.

NOW THE BAD NEWS

MUMPS EPIDEMIC 2006

- Multistate outbreak with 2,597 cases reported in 2006.
- This was the largest number of mumps cases reported to the CDC in the year since 1991 when 4,264 cases were reported. The first cases were an outbreak in eastern Ohio in December 2005. The source of the initial case was never known.
- Age group most affected, 38%, was young adults aged 18 to 24 many of whom as college students.
- Spread to all age groups but particularly young adults.

MUMPS EPIDEMIC 2006

FACTORS CONTRIBUTING

- First, college campus environment; living in dormitories facilitates transmission of mumps and other illnesses that are spread through respiratory and oral secretions.
- Second, the big factor, was at that time only 25 states and the district of Columbia reported a college admission requirement of two doses of MMR vaccine. So most cases of the new outbreak in 2006 were associated with a one-dose schedule.

MUMPS EPIDEMIC 2006

- Two dose coverage with MMR-containing vaccine, as we all know, confer over 99% coverage for MMR related disease.
- There was a delay in diagnosis and treatment by physicians because we have not seen mumps in many, many years.
- It was not an early consideration in vaccinated persons.

MUMPS EPIDEMIC 2006

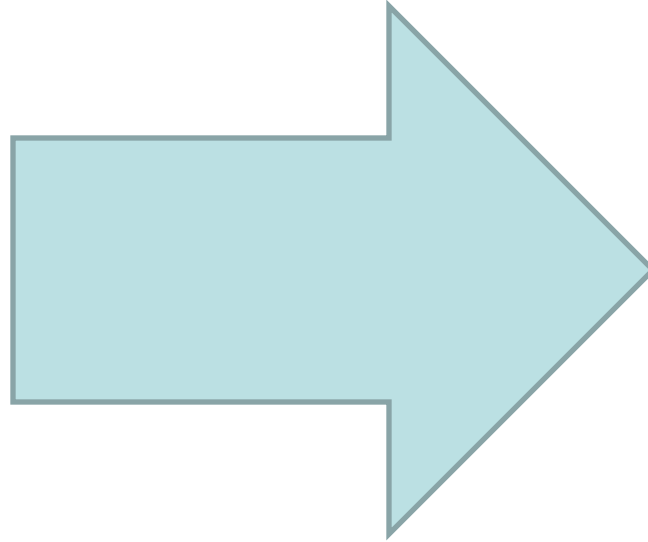
- Waning immunity.
- One MMR in young adults aged 18-24, 6 to 17 years prior.

MUMPS EPIDEMIC 2006

In conclusion:

- One MMR
- Rampant fears about neurological impairment from the MMR, e.g. autism/spectral disorder
- All outlined in *Lancet* Journal article 1998 by Wakefield and associates

MMR



AUTISM

WAKEFIELD/MMR

BACKGROUND ON ANDREW WAKEFIELD

- Was born in 1957; born into a medical family.
- He had done extensive research on pediatric GI disease including Crohn's disease and was seeking somewhat of a link between bowel issues and autism. He actually coined a new phrase called "autistic enterocolitis" in his *Lancet* article in 1998.

WAKEFIELD/MMR, Cont.

- In the *Lancet* article, Dr. Wakefield found 12 cases of autism which he linked directly to the receiving of the MMR vaccination.
- More than the article itself, the subsequent news conferences cast serious doubts regarding the safety of the MMR vaccination.

- WAKEFIELD/MMR, cont

- January 2011 article by Brian Deer appeared in the British Medical Journal (BMJ) and exposed Wakefield's work as an elaborate fraud
- 8 cases had contrived data
- 3 cases had no temporal relation whatsoever to the MMR vaccine
- Subsequent authors have attempted to replicate the study unsuccessfully.
- Furthermore, ten of the co-authors with Andrew Wakefield on the original *Lancet* article have withdrawn support in 2004.

WAKEFIELD/MMR, Cont.

- Ironically, in January of 2005 Wakefield initiated libel proceedings against Channel 4 in England and also Brian Deer, the journalist.
- During the litigation it became obvious that Dr. Wakefield had received over £400,000 (\$600,000) from the Legal Services Commission in 1996 to build the case against the MMR to consider litigation against the manufacturer.
- Within days of that report, Wakefield dropped all libel actions and was required to pay all the defendants legal costs.

WAKEFIELD/MMR, cont.

- In June of 2005 the BBC program Horizon reported on an unnamed and unpublished study of blood samples from a group of 100 autistic children and 200 children without autism.
- They reported finding 99% of the samples contained no trace of the measles virus.
- Samples that did contain the virus were just as likely to be from non-autistic children.

WAKEFIELD/MMR, cont.

- The authors found no evidence of any link between MMR and autism.
- This is the benchmark case with good numbers to indicate the MMR is a very safe and appropriate vaccine when given two times (four weeks apart)

WAKEFIELD/MMR, cont.

- And now in the world, epidemiologists are feeling the backlash from the *Lancet* article even 12 years later in Western Europe where measles cases have been on a vast increase in the past quarter. For example, in France there have been a remarkable outbreak of measles of 7,321 cases.
- Spain 657
- Switzerland 390 ripple effects from lancet article
- UK 345
- Germany 276

WAKEFIELD/MMR, cont.

- Over 90% of these cases were identified as having received only one MMR vaccine, thus the current epidemic evolved. In many of these countries vaccination levels of two MMRs dropped well below 85% because of fears of receiving the MMR vaccine again, predicated on the *Lancet* article, etc.



